

CLAIMS

1. A kit of parts comprising two or more protein kinase substrate polypeptides, each said substrate polypeptide comprising a specificity
5 conferring portion (which is different for each said kinase substrate polypeptide) and a phosphorylatable portion, wherein the phosphorylatable portions of each polypeptide are capable of being bound in a phosphorylation state-sensitive manner by the same specific binding partner, for example an antibody preparation, and wherein the said
10 specific binding partner is not an antibody specific for phosphotyrosine, phosphoserine or phosphothreonine.

2. The kit of claim 1 wherein the phosphorylatable portions of the polypeptides have identical amino acid sequences.

15 3. A kit of parts comprising two or more polypeptides, wherein the polypeptides are two or more protein kinase substrate polypeptides as defined in claim 1 or 2 in which the phosphorylatable portion of at least one said polypeptide is phosphorylated.

20 4. The kit of any one of claims 1 to 3 wherein each said polypeptide is of less than 40, 30, 20, 19, 18, 17, 16, 15, or 14 amino acids in length.

5. The kit of claim 4 wherein each said polypeptide is 13, 12, 11, 10 or 9
25 amino acids in length.

6. The kit of any of the preceding claims wherein the protein kinase substrate polypeptide is a substrate for a serine/threonine protein kinase.

7. The kit of any of the preceding claims wherein the phosphorylatable portion has the amino acid sequence LSFAEPG.
8. The kit of any of the preceding claims further comprising the specific
5 binding partner.
9. The kit of any of the preceding claims wherein the specific binding partner is an antibody.
- 10 10. An antibody specific for the epitope formed by the amino acid sequence LSFAEPG.
11. An antibody specific for the epitope formed by the amino acid sequence LpSFAEPG.
- 15 12. A polypeptide of less than 40, 30, 20, 19, 18, 17, 16, 15, or 14 amino acids in length wherein the polypeptide is not a fragment of glycogen synthase kinase 3, and wherein the polypeptide comprises the amino acid sequence LSFAEPG (which includes sequences with no, one, two, three,
20 four or five residues (other than the serine) conservatively substituted) and further comprising a specificity conferring portion comprising an amino acid sequence (which may overlap with the sequence LSFAEPG) corresponding to a consensus sequence for a protein kinase, wherein the sequence corresponding to the consensus sequence is positioned relative
25 to the sequence LSFAEPG such that the protein kinase is capable of phosphorylating the polypeptide at the serine residue of the sequence LSFAEPG.
13. The polypeptide of claim 12 wherein the polypeptide is 13, 12, 11, 10
30 or 9 amino acids in length.

14. The polypeptide of claim 12 or 13 wherein the amino acid sequence corresponding to the consensus sequence extends to the N-terminus of the sequence LSFAEPG

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15. The polypeptide of any one of claims 12 to 14 wherein the consensus sequence is Arg/Lys-Arg/Lys-Arg/Lys-Xaa-Ser, Arg/Lys-Xaa-Arg/Lys-Xaa-Xaa-Ser, Hyd-Xaa-Arg-Xaa-Xaa-Ser or Xaa-pSer-Xaa-Xaa-Ser.

10 16. A polypeptide according to any one of claims 12 to 15 in which the serine in the sequence LSFAEPG is replaced by phosphoserine.

17. The use of a polypeptide or phosphorylated polypeptide according to any one of claims 12 to 16 in an assay of protein kinase activity.

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18. The use of an antibody according to claim 10 or 11 in an assay of protein kinase activity.

19. A method for screening for protein kinases in a sample which may
20 contain protein kinases comprising exposing a polypeptide as defined in any one of the preceding claims to the sample and determining whether and optionally to what extent the said polypeptide is phosphorylated.

20. A method for assessing the activity of a protein kinase, comprising
25 the steps of exposing the protein kinase to a polypeptide according to any one of claims 12 to 15, and determining whether and optionally to what extent the said polypeptide is phosphorylated.

21. A method for assessing the activity of a first protein kinase and a second protein kinase, comprising the steps of exposing the first protein kinase to a first polypeptide of a kit according to claim 1, and exposing the second protein kinase to a second polypeptide of a kit according to claim 1; and determining whether and optionally to what extent the said polypeptide is phosphorylated.

22. A method for assessing the activity of a protein kinase, comprising the steps of exposing the protein kinase to a first (unphosphorylated) polypeptide of a kit of claim 2, and determining whether and optionally to what extent the said polypeptide is phosphorylated.

23. A method for characterising the substrate specificity of a protein kinase, comprising the steps of exposing the protein kinase to a first polypeptide of a kit of claim 1, and exposing the protein kinase to a second polypeptide of a kit of claim 1; and determining whether and optionally to what extent the said polypeptides are phosphorylated.